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Cleveland, Toledo utilities merge to aid N-projects

Dan Utroska
Associate Editor

Spurred by the need to strengthen their access to capital markets in order to complete several nuclear power plants now under construction and to possibly mitigate the impact of large rate increases on Ohio ratepayers, Cleveland Electric Illuminating Co. and Toledo Edison have declared they intend to merge.

Announcement of the proposed $8-billion affiliation came at the signing of a definitive agreement between the two investor-owned electric companies to establish a holding company that will provide overall management, planning, and policy making.

Both Cleveland Electric and Toledo Edison will continue as local companies under their existing boards of directors and management.

The announcement was made June 25 simultaneously in Cleveland by CEI chairman Robert M. Ginn and president Richard A. Miller, and in Toledo by Edison Chairman John P. Williamson. Terms of the agreement call for owners of Toledo Edison stock to receive one share of the new holding company for each TE common share held. CEI owners will receive 1.11 shares of the new holding company for each common share of CEI held. Williamson will act as chairman of the new holding company, which at press time had not yet been given a name. Ginn will be president and chief executive officer, and Miller will be executive vice president.

Regulatory approvals for the merger are seen to be needed from the Securities and Exchange Commission, the Ohio Public Utilities Commission, and the Nuclear Regulatory Commission. If authorizations are expeditiously obtained, the companies expect to have the affiliation finalized by the end of the year.

The new holding company will be among the 20 largest electric utilities in the nation in terms of the market value of its common stock. Individually, CE is 27th largest; TE is 48th. The two companies will have a combined common stock market value of about $2.4 billion and total assets of more than $8 billion.

Nuclear projects are driving force

Together, the two companies own all of the Davis-Besse nuclear plant, operated by Toledo Edison; slightly more than 50 percent of the Perry nuclear plant, unit 1, that is nearing construction completion; and about 44 percent of Beaver Valley 2, being built by Duquesne Light Co. and scheduled for completion near the end of 1987.

At a meeting of New York securities analysts, Robert Ginn was asked why the merger is being proposed at this time. "Obviously," he said, "any companies that are building nuclear plants are having a tough time financing [them]; any companies that are trying to operate nuclear plants are running into problems."

Recalling the companies' ownership of both the Davis-Besse and Perry nuclear projects, Ginn said "that probably is driving the thing to the conclusion" to merge.

The effort to reduce costs was also said to constitute a primary motivation for the merger action.

FACTS AT A GLANCE

	Cleveland Electric	Toledo Edison
Service territory:	1,700 square miles (Ashtabula, Cuyahoga, Geauga, Lake Counties)	2,500 square miles (Defiance, Fulton, Henry, Lucas, Ottawa, Sandusky, Williams and Wood Counties)
Number of customers:	714,788	271,723
residential:	644,904	243,912
commercial:	61,934	23,891
industrial:	7,521	3,920
1984 kilowatthour sales:	17.3 billion	7.5 billion
1984 operating revenues:	$1.2 billion	$551 million
Number of employees:	6,100	2,400
Total plant investment:	$5.1 billion	$1.4 billion
Circuit miles of lines in service:	30,248	8,834
1984 peak load:	3,371 megawatts	1,327 megawatts
Generating plants:	Ashtabula (coal) Avon Lake (coal, oil) Davis-Besse (nuclear) Eastlake (coal, oil) Lake Shore (coal, oil) Mansfield (coal) Seneca (pumped hydro)	Acme (coal, oil) Bay Shore (coal) Davis-Besse (nuc.) Defiance (oil) Mansfield (coal) Richland (oil) Stryker (oil)
First year in business:	1881	1901

According to Linda Caldwell of Duff and Phelps', Toledo Edison clearly stands to benefit from the merger, especially in terms of its ability to complete its financing for the Perry nuclear plant. "Things were getting a little tight for them," Caldwell told *EL&P*. Toledo Edison was one of the relatively weaker partners in the Perry enterprise, from a financing standpoint, but by melding with Cleveland Electric, in the form of the new holding company, it has enhanced its financial stability, Caldwell said.

For its part, Cleveland Electric now has Edison on its side in major construction decisions involving the Perry plant. The holding company owns 51 percent of the project, and while CE will still have to convince other participants in the project that what it wants to do is in their interests, CE and Edison will present a united front to the other partners.

Caldwell said that the financial community has generally reacted positively to the proposed affiliation, and the market also seems to be supporting the action. While Edison stock rose after the announcement of the merger, CE stock remained stable.

Securities ratings confirmed

The day after the merger announcement, Moody's Investors Service confirmed its ratings on the outstanding debt and preferred stock of both companies. The Baa2 ratings of Cleveland Electric's first mortgage bonds and secured pollution control issues were confirmed, as was the Baa3 ratings of the first mortgage bonds and secured pollution control issues of Toledo Edison.

A Baa3 rating is one notch above a non-investment grade security, or "junk bond," as it is commonly called. A Baa2 rating is two notches above

Continued on page 13

Heber testing underway

Construction has been completed and testing is underway at the world's first commercial-size binary geothermal power plant. The $188-million Heber Binary Project, located in California's Imperial Valley, was expected to begin producing electricity in June. San Diego Gas & Electric which manages and operates the project said the plant will eventually produce enough electricity to serve 45,000 people. The project produces electricity from hot underground water using binary energy technology.

EEI issues first expense audit; critics challenge usefulness

Reporting criteria, not EEI response, is major complaint

Dan Utroska
Associate Editor

Disagreement among state regulators and consumer advocates over how the Edison Electric Institute should have been required to conduct its operational audit appears mainly responsible for the sharp criticism the recently-issued document has received.

On July 1, in accordance with an earlier mandate issued by the National Association of Regulatory Utility Commissioners, EEI released its financial operations report. The document follows procedures that were transmitted to EEI by NARUC on how to record and express selected expenses (see *EL&P*, November 1984, page 1).

An operational audit is different from a conventional financial audit in that it seeks to formally trace both the activities and expenditures of each department within EEI.

The time period covered in this first EEI audit report is the last quarter of 1984.

In the audit, operating expenses have been broken down according to eight major categories: legislative advocacy, legislative policy research,

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Foreign Power Briefs

● **The EEC Commission** will organize a closer information exchange system between its ten member companies, the U.S. and Sweden on 'abnormal events' in nuclear operator reactions. *Nuclear Engineering International* reports that a system is being established so that information on all incidents can be placed in a data bank. All nuclear operator members would have access to the information.

● **Oman's Ministry of Electricity and Water** has been awarded a $7.5-million contract by Power Transmission Lines Ltd., a subsidiary of Dravotec, S.p.A. of Milan, to design, supply and erect a 75-kilometer transmission line. The firm said the 132-kV line will extend from Mabella to Musannah in the Sutanate of Oman and will transmit electricity from the Rusail power plant. The project was expected to get underway in June and be completed in May 1986.

● **Britain's Dept. of Energy** said provisional statistics show that energy consumption in the United Kingdom from January to March rose by 2.9 percent compared with the same period a year ago. Coal consumption fell by 33.2 percent, petroleum use increased 34.4 percent over the same period, natural gas consumption rose by 7.8 percent and nuclear and hydro capacity increased 20.2 percent.

● **Chichibu Cement Company, Ltd.**, Japan's sixth-largest cement producer, has signed a "grant of technology" agreement with Pacific Nuclear Systems Inc. Under the agreement, Pacific Nuclear will distribute Chichibu's polymer impregnated high integrity nuclear waste container in the United States. Pacific Nuclear said NRC approval of the container is pending and expected later in 1985.

● **The China National Technical Import Corporation (CNTIC)** has awarded two contracts to Kaiser Engineers and Constructors, Inc. to assist in development of two coal preparation plants in China. Under the contract, Kaiser said it will provide a computer-controlled system for a coal preparation plant nearing completion in Shanxi province and one for a plant to be built in Anhui province.

● **Germany's ASEA GmbH** has received an order from the German Democratic Republic for eight 200MVA, 220-kV three-phase power transformers. In terms of volume, ASEA said it is one of the biggest contracts in the field to have been awarded in central Europe in recent years.

● **The Egyptian Electricity Authority** has selected Stone & Webster Engineering Corp. to study the feasibility of a proposed 1,200 MW fossil-fired power plant. Stone & Webster said it has been asked to evaluate the need for and timing of the proposed capacity addition, to recommend the number and size of the units required, and to determine whether the plant should be fueled with natural gas, coal or oil. The company said it also will recommend a site and assess the financial and economic feasibility of the project. The study is expected to be completed by October 1985.

● **China's** Ministry of Water Resources and Electric Power said it generated 9.1 percent more electricity in the first six months of 1985 than it did during the same period last year.

● **DOE Secretary John S. Herrington** headed a U.S. delegation in July that attended the International Energy Agency Ministerial Conference in Paris.

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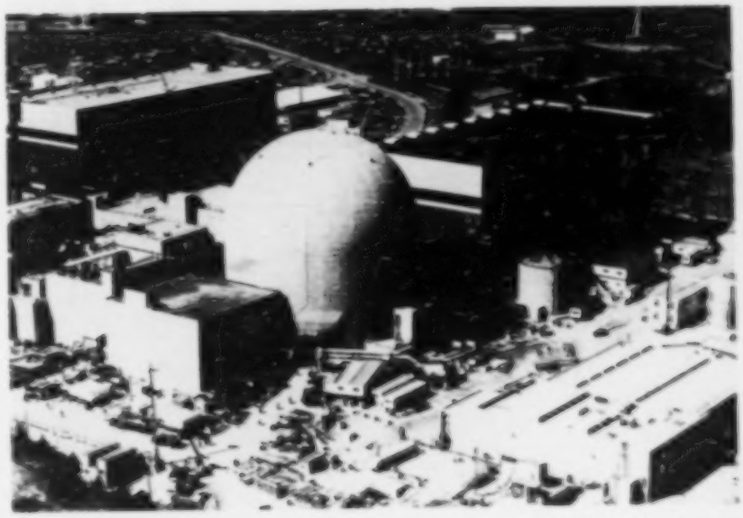
EL&P readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (•) in the upper right corner of page 1; the T/D edition carries two dots (••). All readers receive EL&P's industry news section.

Owners say Seabrook now a 'project under control'



While the Seabrook nuclear plant has had trouble obtaining adequate financing because owners are subject to five regulatory jurisdictions, it now appears that sufficient funding is probable.

SEABROOK, N.H.—Financing needed to complete the beleaguered Seabrook nuclear plant now appears feasible, according to a statement released by New Hampshire Yankee in mid-July. This brightened outlook follows problems last May that threatened to end construction of the project.

As reported by *EL&P* (June, page 1), Fitchburg Gas & Electric announced last May it would withhold its May payment for the Seabrook project and a number of other key utilities were having trouble with their respective public utility commissions in securing authorization to fund the troubled project.

New investors

But according to an annoucement from New Hampshire Yankee, the joint Seabrook owners have found new investors who are willing to negotiate the purchase of the ownership shares of any joint participant that is forced to withhold or stop payments on the project.

Addressing a meeting of the executive committee of the 16 project owners at the Seabrook site, George Edwards, chairman of a task force to resolve financial problems, said that the willingness of these potential investors to step in "virtually assures the project's completion."

The new investors are reported to have been identified by Merrill Lynch Capital Markets, which has been acting as investment counselor to the owners' task force.

Edwards said the investors are "very interested in acquiring substantial ownership interests in Seabrook 1 and 2, assuming the price is reasonable and agreement can be reached on terms."

Specific terms of the proposed plan would be negotiated between buyer and seller at the time of the transaction.

Safety net in place

"With this safety net in place," Edwards offered, "the project management team can get on with the job of finishing construction, knowing that adequate funding is available."

Merrill Lynch is also said to be working on interim financing that would be available to any joint owner while that owner engages in negotiations to sell its share of the Seabrook project. As of late June, 84.4 percent of the plant ownership was reported to either have regulatory authorization to finance its share of construction costs to completion, or to have the ability to continue contributing funds to complete the project without further regulatory approval.

Related action

In a related action, five project participants are voluntarily advancing construction payments to prevent a funding shortfall due to non-payment by Fitchburg.

The cash-to-go estimate released in mid-June is $655 million, down from an $830 million estimate made in August 1984. The figures represent the cash still needed to complete Seabrook.

Commenting on the estimate's reduction, Edward A. Brown, president of New Hampshire Yankee said, "This is clear evidence that we have this project under control. It is also good news for consumers that the cost to complete the project is steadily decreasing."

Spending cap lift sought

With arrangements pending to secure all needed financing for the plant, even if some current participants are forced out of the project, Public Service of New Hampshire has petitioned the state Public Utilities Commission to remove the current cap on Seabrook spending.

Currently, PSNH is prohibited from spending more than about $1.8 million per week, which is its ownership share of the approximately $5 million per week currently being expended on construction.

PSNH believes it must increase its weekly spending by about $1.4 million to allow the next major construction milestone, "hot functional testing," to be achieved on schedule.

PSNH president Robert J. Harrison said the company made the PUC petition to avoid construction delays of at least three to four months and additional costs as high as $250 million.

"The completion of Seabrook-1 is now well within sight," he said. "Allowing work to slip now would only push up future costs to consumers and further delay a plant that is needed to maintain an adequate supply of electricity."

Growing business risks challenge utility credit

NEW YORK—Business risks in the electric utility industry are rising, and because of this utility managers and regulators increasingly will have to provide greater financial protection to investors if credit quality and bond ratings are to be maintained.

According to Douglas Randall, senior vice president at Standard & Poor's, the growing riskiness of utility investments are not confined to those companies building nuclear power plants, but apply across the board to all electric utilities.

Speaking here to the annual meeting of the Edison Electric Institute Finance Committee, Randall said that although new plant construction has ebbed in recent years, increased electricity demand and the replacement of old generating capacity is likely to lead to another building boom in the not-to-distant future.

When it comes, he said, it's going to be expensive, especially since the installation of scrubbers on coal-fired power plants is required to handle flue-gas emissions.

"So, while the conclusion of the current construction cycle is providing an opportunity to rebound financially, the next round of construction entails considerable uncertainty as to when it's going to come, what it's going to be for, how much it's going to cost, and, perhaps most important, how you're going to pay for it," Randall said.

"That's risk," he added.

Further, over the past few years, the operating leverage achieved by many utilities has turned sales growth into substantially improved profits. This stems from the fact that as construction winds down and fixed costs are covered, sales revenues send more money to the utility's bottom line.

But this leverage has its dark side, Randall said. When sales decline, profits go down even faster. "As long as incremental costs substantially exceed embedded costs, you'll be flirting not only with the negative impacts of cyclical demand, but also with the possiblity of finding yourself on the elastic portion of your demand curve. That's risk."

In addition, the word out of Washington is that the accelerated cost recovery system and investment tax credits may not survive the tax reform frenzy, at least not in their current form.

"We don't really know what's going to come out of efforts to overhaul the tax code, but we're not optimistic about it," Randall said. "That's risk."

Finally, rising equity levels may not yield appropriate returns and this acts as a disincentive to investors. This possibility leaves the utility with a number of choices, none of them particularly attractive, Randall said. Management can simply accept lower returns for shareholders, thereby reducing the attractivenss of the common stock investments. Alternatively, higher dividends can be paid on stock repurchases. Or management can seek investment opportunities that provide higher returns, although these are likely to be relatively risky ventures. And even if these investment opportunities are successful, there is no assurance these benefits will flow to shareholders.

"It doesn't matter how we look at it, it comes up risk every time," Randall said. "If rising equity levels have to go begging for opportunities to earn equitable utility returns, that's risk."

Additional risks seen attending utility investments include fuel adjustment clauses that penalize investors if fuel costs exceed certain forecast levels; regulatory prudency reviews; construction cost caps; rate phase-ins; abandoned projects without cost recovery; public officials using utility matters for political gain; diminished load; and the requirement that utilities purchase all non-utility generated power at avoided costs.

Financial 'benchmarks' changed

In response to the growing riskiness of the utility business, in January Standard & Poor's announced that it was making more stringent the criteria it uses in evaluating utility risk factors and determining securities ratings. In general, these new "benchmarks" call for less leverage, stronger earnings, and healthier cash flows than the criteria used previously.

In his speech before EEI's Finance Committee, Randall denied that the S&P change itself made it more difficult for utilities to get and maintain higher ratings.

"We changed the benchmarks to reflect what we see as a meaningfully higher level of business risks in the electric utility industry," he said. "If it turns out that higher ratings are harder to come by—and that may well be the case—it won't be because the benchmarks have been tightened, but because electric utility industry and business risks have gone up without compensating increases in the fundamental financial protection available for securities holders."

Specifically, Randall said that the changed rating criteria include, among other elements, the elimination of allowance for funds used during construction (AFUDC). This move, Randall said, was to more fully key earnings to real cash.

AFUDC is the non-cash, accounting accrual of interest and deferred returns a utility is permitted to tabulate while it constructs a large plant. It is reported as income; only after the plant becomes operational do regulators authorize collection of this statistical fund from ratepayers.

AFUDC, Randall declared, is "an idea who's time has gone."

"These so-called 'earnings' have turned out to be worth even less than the paper they were written on," he said.

AFUDC attacked

Randall attacked the appropriateness of AFUDC on the basis of its recoverability. "S&P used to say that AFUDC was like a long-term receivable," he said. "But, now that phase-ins, imprudency penalties, mismanagment disallowances, and excess capacity denials have become virtually standard operating procedure for regulators, AFUDC looks an awful lot more like a bad debt than a high-quality receivable."

The Standard & Poor's vice president reported that for ratings purposes, AFUDC will simply no longer be employed as a measure of capital productivity, earnings protection, or asset quality. The new ratings criteria reflect this revised perspective.

The new criteria (see tables) also measure cash flow against invested capital, rather than construction spending. This is seen to give a better picture of how rapidly investors can expect recovery of their outlays. The importance of this is emphasized, as construction activity winds down and regulators question whether utilities therefore actually need such healthy cash flows.

Regarding debt leverage, Randall said the S&P criteria are tighter by a couple of hundred basis points across the board (100 basis points equals one percent). But these new benchmarks don't just address capital as reported on financial statements. All off-balance sheet obligations are capitalized, including nuclear fuel leases, capital leases, power purchase contracts, and anything else that might be considered debt. "Dubious" assests are written down or written off.

"When we talk about the need to build equity into the capital structures to reduce leverage and financial risk, it's these adjusted capital structures that we're talking about," Randall concluded.

KEY CREDIT MEASURES – INDUSTRY COMPOSITE

	1970	1975	1980	1984
Pretax coverage** - X	2.85	2.33	2.07	2.52
Cash flow/construction - %	30.0	38.6	29.6	48.9
Cash flow/capital - %	4.0	4.4	3.5	4.8
Debt/capital - %	55.3	52.6	50.4	48.5

**Excluding AFUDC

Source: Standard & Poor's

BENCHMARK RATIOS

	Pretax* interest coverage - X	Cash flow/capital - %	Debt/capital - %
AAA	>4.5	>10	<41
AA	3.5–5.0	7–11	39–46
A	2.5–4.0	5–8	44–52
BBB	1.5–3.0	2½–6	50–58
BB	<2.0	<3	>56

*Excluding AFUDC

Source: Standard & Poor's

Utilities garner top TVB/PUCA gold awards

LAS VEGAS—"Louie the Lightning Bug" came away with top honors at the 7th annual Television Bureau of Advertising/Public Utilities Communicators Association Better Communications Contest here in June.

Alabama Power Company won the Gold Award for utilities with over 500,000 customers for its television commercials featuring the animated character. The commercials are part of the utility's comprehensive youth education program stressing safety around electricity.

For companies with 250,000 to 500,000 customers, the Gold Award went to Portland General Electric Co. for its benefit/value campaign to help customers understand what they get for what they pay.

Sierra Pacific Power Co. won the under 250,000 customer class for its program to improve customers' perceptions of the company as being well-managed, efficient and planning ahead effectively.

Other award winners included Houston Lighting & Power Co., Northern States Power Co., Wisconsin Power & Light Co. and Mississippi Power Company.

Identify with Louie

"One of the primary objectives of the youth education campaign is to tie in with future customers of Alabama Power and provide a positive image," explained F. Neal Wade, Alabama Power manager of public communications. "Kids identifying Louie the Lightning Bug with Alabama Power will have a better feeling about the company fifteen years from now because they learned about electricity from a character called Louie the Lightning Bug."

Eight months after the utility began its advertising campaign, a survey of its service territory showed that 94 percent of the children had heard of the animated lightning bug and 68 percent named Alabama Power as the sponsor.

It works

"If you can bring electric rates down to basically a benefit/value and see what you get for what you pay, it works. Our rate satisfaction level has gone up from 39 percent two-and-a-half years ago to 62 percent," said F.D. Weiden, vice president of public relations and advertising for Portland General Electric.

He added that results are also shown "in a more favorable attitude toward the utility. That went from a 42 percent favorable attitude two-and-a-half years ago to 67 percent, according to independent surveys."

Sierra Pacifc Vice President Stanton K. Berdrow said his company is trying to improve its customers' perceptions.

Through television commercials, the utility tells how Sierra Pacific is meeting its energy needs, what the company has done in the past decade to shift from costly oil and gas to coal-fired generation, and the company's pioneering use of geothermal power.

"In a benchmark study in 1980, only two of ten customers believed we were actively working to solve the rate problem," said Berdrow. "Now, more than six of ten say we're moving forward to take care of the problem. That's the kind of acceptance and understanding you want, but you've got to tell the story. Customers just can't pick it up. You explain and demonstrate it and give them examples. That's what television has let us do."

Labor concession study available free to execs

CHICAGO—A new study by University Research Center which discusses the need to gain wage, work rule and benefit concessions from unions in new contracts is being made available free by the center.

The study cites examples of instances in which such company demands were successfully achieved without labor upheaval.

Single copies of the study, *Does Concession Bargaining Have a Future?*, are available free to executives that request one from Goodfellow at University Research Center, 209 S. Wells, Suite 1830, Chicago, IL 60604.

The Top 100 electric utilities' 1984 operating performances

Robert Smock
Managing Editor

Oil consumption plummeted in 1984...peak demand rose only modestly...new nuclear plants provided a slight boost in generating capacity.

Those are the highlights of this year's annual review of operating data from the 100 largest investor-owned utilities, based on information gleaned from their Uniform Statistical Reports. Data from individual companies are shown on the four large tables on the following pages. Summaries are shown in the smaller tables.

Changes in fossil fuel consumption are shown in Table 1. Coal usage was about the same as in 1983, but oil consumption dropped significantly while gas use rose. That revives a fuel use trend that developed about the time of the Iranian revolution and the subsequent oil price runup in 1979 and 1980.

Utilities with dual-fuel generating capacity switched from oil to natural gas in large numbers. With the cooperation of the federal government, natural gas was made easily available to utilities who could show it would be used to reduce oil consumption.

The trend died out in 1982 and 1983 as rising gas prices and slumping oil prices made gas less attractive. In addition, sluggish electricity demand during the economic recession made it possible to continue reducing oil demand without replacing it with gas. Vigorous growth in electricity demand in 1983 eliminated the oil replacement trend completely, with oil demand actually increasing slightly while gas consumption decreased.

However, utilities seemed to be back on the track in 1984. Natural gas use rose almost 7 percent, the first gain in several years, while oil consumption dipped nearly 17 percent. The top 100 electric utilities burned only 190 million barrels of oil in 1984. Oil consumption by the group peaked in 1978 at 582 million barrels.

While gas consumption was used to offset oil at many utilities, it does not account for the long range decline in oil use by utilities. The top 100's gas consumption was about the same in 1984 as it was in 1978.

Over the long term, coal and nuclear are the generation types that have increased significantly since oil use peaked out in 1978. Coal use by the top 100 grew from 420 million tons to 477 million in 1984. Nuclear generation, not shown in the top 100 data, has increased about 18 percent since 1978.

Utilities that showed the largest declines in oil consumption in 1984 (among those that burned at least one million barrels during the year) were:

- Southern Cal. Edison...down 68 percent to 1.1 million barrels,
- San Diego Gas & Electric...down 60 percent to 1.8 million barrels,
- Florida Progress...down 49 percent to 4.7 million barrels,
- Teco Energy...down 44 percent to 1.3 million barrels,
- FP&L Group...down 36 percent to 22.1 million barrels,
- Pennsylvania P & L...down 29 percent to 6.9 million barrels,
- Baltimore Gas & Electric...down 26 percent to 2.3 million barrels,
- Commonwealth Edison...down 23 percent to 4.4 million barrels,
- Consolidated Edison...down 21 percent to 17.6 million barrels,
- Eastern Utilities Assoc...down 20 percent to 2.7 million barrels,
- Orange & Rockland ...down 20 percent to 1.9 million barrels,
- Boston Edison...down 12 percent to 9.1 million barrels,
- Niagara Mohawk...down 11 percent to 6.4 million barrels,
- Dominion Resources...down 8 percent to 2.4 million barrels, and
- Central Hudson G & E...down 6 percent to 6.0 million barrels.

TABLE 1
FOSSIL FUEL CONSUMPTION

	1983	Change	1984	Change
Coal (million tons)	479	+3.9%	477	−0.4%
Oil (million bbl)	228	+0.4%	190	−16.7%
Gas (billion cu ft)	2586	−2.0%	2764	+6.9%

In past years the list of companies that led in reducing oil consumption included several who had converted oil-burning capacity to coal and showed a corresponding increase in coal use. However, that trend seems to have largely run its course—at least for this round of oil price increases.

However, the export of coal-fired energy from Southern Company to Florida is clearly having an impact. All three large Florida investor-owned utilities are at the top of the list of oil consumption reducers. While not strictly conversion to coal, this coal-by-wire does reflect the relative economics of oil and coal.

Gas use up

The short term connection between between oil decreases and gas increases can be seen by looking at the list of utilities with the largest year-to-year gains in gas consumption in 1984 (among those consuming at least one billion cubic feet last year):

- Northeast Utilities...up 142 percent to 5.7 billion cubic feet,
- Philadelphia Electric...up 107 percent to 1.1 billion cubic feet,
- Nevada Power...up 62 percent to 3.2 billion cubic feet,
- Central Hudson Gas & Electric...up 54 percent to 5.1 billion,
- Boston Edison...up 31 percent to 20.0 billion cubic feet,
- Pacific Gas & Electric...up 31 percent to 24.8 billion cubic feet,
- Consolidated Edison...up 30 percent to 87.7 billion cubic feet,
- San Diego Gas & Electric...up 29 percent to 48.4 billion cubic feet,
- Orange & Rockland...up 27 percent to 16.7 billion cubic feet, and
- Delmarva Power & Light...up 27 percent to 2.8 billion cubic feet.

Of the ten utilities with the largest increases in gas use in 1984, six also showed up on the list of utilities with the largest decreases in oil use. California utilities clearly took advantage of gas to reduce oil consumption in 1984. They lead the list of utilities with oil declines and two are on the list of those with the largest increases in gas use.

Coal use was not much changed in 1984. Here's how the largest coal users fared:

- Southern Company...up 12 percent to 39.7 million tons,
- Texas Utilities...up 1 percent to 29.6 million tons,
- American Electric Power...up 2 percent to 15.8 million tons,
- Commonwealth Edison...down 15 percent to 14.3 million tons,
- Detroit Edison...up 4 percent to 14.2 million tons,
- Union Electric...up 4 percent to 11.8 million tons, and
- Carolina Power & Light...up 8 percent to 10.6 million tons.

Southern Company's Florida connection is in evidence.

Efficiency still climbing

The large table showing individual company fuel consumption also ranks the top 100 by system heat rate. Overall, utility thermal efficiency continues to improve. Since 1982 when the median was 10,790 Btu/kWh, the median has dropped to 10,650 in 1983 and 10,616 in 1984.

The most efficient utilities are pretty much the same as in recent years, with a slight shuffling of positions in the top 20.

EL&P has been criticized for publishing this annual heat rate ranking of utilities. "You're not even comparing apples and oranges," said one critic who cornered an editor at the American Power Conference. Differences in geography, fuel types, plant age and type, pollution control equipment, and a host of other factors make comparisons almost meaningless, the critic argued.

It is true that it would be grossly unfair to conclude that a utility ranking higher than another on the heat rate table is better managed...or that a utility whose system heat rate increased is suffering from some blunder in plant operation.

However, *EL&P* plans to continue publishing the data. We deplore the way some may misuse it, but we don't feel that's a good reason for not publishing it.

There are some utilities with systems similar enough to make comparisons meaningful and the heat rate data has spurred some informal competitions over the years that can only benefit everyone involved.

Changes in heat rate or differences in relative rankings can not support conclusions by themselves, but the changes do suggest questions about utility operations that can lead to meaningful conclusions.

As in past years, the 20 most efficient base-loaded generating units

TABLE 2
PEAK DEMAND AND RESERVE MARGINS

	1983	Change	1984	Change
Seasonal peak (MW)	378,465	+4.2%	383,377	+1.3%
Total system capability (MW)	474,238	+1.6%	476,664	+0.5%
System reserve margin	25.3%		24.3%	
Total owned capability (MW)	443,370	+0.9%	449,432	+1.4%
Owned reserve margin	17.1%		17.2%	
Average load factor	57.7		59.6	

TABLE 3
TYPE OF GENERATION (MW)

Type	1983	Change	1984	Change
Conventional steam and combined cycle	338,646	−0.3%	340,911	+0.7%
Hydro and pumped storage	24,613	−2.1%	24,731	+0.5%
Gas turbines and internal combustion	37,488	+1.5%	34,346	−8.4%
Nuclear	46,604	+8.1%	51,608	+10.7%
Total	447,351	+0.5%	451,596	+0.9%

HEAT RATES AND FUEL CONSUMPTION

Company	Rank	Heat Rate (Btu/kWh)	Up or Down	Fuel Consumption: Coal (1000 tons)	Oil (1000 bbl)	Gas (1000 MCF)	Percent Change In: Coal	Oil	Gas
Commonwealth Energy System	1	9,643	D	0	7,222	3,385	0	+31	+23
Consumers Power	2	9,844	D	6,260	330	356	+6	+29	+57
Duke Power	3	9,853	U	9,835	145	184	–19	–11	–56
Dayton Power & Light	4	9,951	D	4,437	8	45	–1	–27	–38
United Illuminating	5	9,956	U	0	8,108	0	0	–4	0
American Electric Power	6	9,967	D	19,186	5	8	–2	–	0
Detroit Edison	7	9,980	D	14,210	102	8,088	3	–12	–29
Cincinnati Gas & Electric	8	9,986	D	7,301	285	86	+1	–60	–24
New England Electric System	9	10,071	D	3,284	7,700	3,701	+18	–3	+20
Florida Progress	10	10,074	D	3,818	4,678	3,865	+1	–40	–14
South Carolina Electric & Gas	11	10,099	U	3,775	1	168	+7	0	–58
Illinois Power	12	10,107	D	7,275	73	371	–2	–57	–35
Potomac Electric Power	13	10,115	D	6,689	1,378	0	+5	+2	0
Public Service of Indiana	14	10,119	D	13,217	1	0	+16	–75	0
Southwestern Public Service	15	10,123	D	5,110	16	72,940	+19	–	–3
Allegheny Power	16	10,136	D	10,788	5	0	+7	–	0
Central Hudson Gas & Electric	17	10,154	U	0	5,883	5,288	0	–6	+64
Toledo Edison	18	10,183	D	2,017	4	91	+12	+33	+23
Carolina Power & Light	19	10,189	D	10,884	15	834	+6	–77	–62
Southern Company	20	10,209	D	39,884	91	4,280	+02	–62	–58
Union Electric	21	10,210	U	11,839	37	497	+4	–56	–27
Boston Edison	22	10,233	U	0	9,126	20,000	0	–12	+31
Houston Industries	23	10,277	U	9,309	46	361,992	+9	–60	+1
Teco Energy	24	10,316	U	5,056	1,334	0	+13	–44	0
Eastern Utilities Associates	25	10,331	U	391	2,743	0	+45	–20	0
Sierra Pacific Power	26	10,331	D	490	9	3,286	+3	–46	–95
Pennsylvania Power & Light	27	10,349	U	11,110	6,804	0	+1	–28	0
Central & South West	28	10,377	D	11,308	157	250,072	–2	–70	+4
Public Service of New Hampshire	29	10,397	D	1,186	3,901	0	+16	+27	0
Orange & Rockland	30	10,401	D	0	1,859	10,746	0	–39	+27
Cleveland Electric Illuminating	31	10,416	D	6,165	74	0	–	–34	0
IPALCO	32	10,461	D	5,209	47	1	–4	–6	–
Hawaiian Electric	33	10,467	U	0	10,734	0	0	+2	0
Central Illinois Light	34	10,471	U	2,146	0	67	–4	0	–34
Long Island Lighting Co.	35	10,483	U	0	15,531	29,149	0	0	–
Pasara Mesquite Power	36	10,496	U	3,289	6,401	27,618	+1	–11	+13
Savannah Electric & Power	36	10,496	D	946	13	473	+7	–82	–85
Central Illinois Public Service	38	10,504	D	9,236	25	0	–4	+142	0
Gulf States Utilities	39	10,505	D	1,766	85	230,937	–4	–67	–1
Midwest Energy	40	10,529	D	1,862	13	360	–1	–69	+69
Atlantic Electric	41	10,535	U	1,195	2,319	1,399	–2	+1	–27
Louisville Gas & Electric	42	10,536	U	3,646	–	888	–2	–	+158
FP&L Group	43	10,545	U	0	22,186	107,923	0	–36	–4
Ohio Edison	44	10,561	D	10,323	21	0	+9	–9	0
Utah Power & Light	45	10,557	D	7,568	3	106	+10	–96	–77
New York State Electric & Gas	46	10,562	U	5,126	21	0	+10	–	0
Delmarva Power & Light	47	10,567	D	2,828	3,334	5,335	–2	–	+27
Dominion Resources	48	10,581	D	8,559	2,368	2,813	+16	–6	–8
Wisconsin Power & Light	49	10,582	U	3,314	49	91	+2	0	–61
Public Service Electric & Gas	50	10,610	D	3,857	6,969	68,836	–7	+13	–7
Southern Indiana Gas & Electric	51	10,626	D	2,094	0	402	+6	–100	+7
Idaho Power	52	10,632	D	2,073	1	5	+29	–	–
General Public Utilities	53	10,644	D	6,928	1,279	26,705	–6	+9	+3
San Diego Gas & Electric	54	10,646	U	0	1,751	48,409	0	–60	+29
Rochester Gas & Electric	55	10,647	D	798	422	296	–4	–34	+75
Baltimore Gas & Electric	56	10,677	D	3,291	2,311	732	+43	–36	–49
Missouri Public Service	57	10,680	U	1,450	8	76	+2	–95	–25
Duquesne Light Co.	58	10,682	U	4,646	70	91	+10	–19	–
Central Louisiana Electric	59	10,711	U	703	1	29,260	+16	–82	–11
El Paso Electric	60	10,790	U	396	1	21,467	–3	–98	+14
Kansas City Power & Light	61	10,756	D	5,795	95	778	+11	–27	–44
Kentucky Utilities	62	10,762	U	4,335	2	2	–1	0	–33
Minnesota Power	63	10,773	D	3,935	0	0	+35	0	0
Wisconsin Public Service	64	10,782	D	3,034	353	26	+1	+4	–68
Northeast Utilities	65	10,790	U	420	12,868	5,722	+12	+10	+142
Oklahoma Gas & Electric	66	10,810	U	6,349	32	119,881	+29	+113	–15
Arizona Public Service	67	10,841	D	7,569	36	8,135	+3	–78	–3
Southern California Edison	68	10,851	D	9,160	1,107	228,994	–1	–68	+5
Tucson Electric Power	69	10,859	D	2,254	383	2,417	–24	+29	+10
Iowa-Illinois Gas & Electric	70	10,888	D	1,946	14	633	+6	+8	–43
Middle South Utilities	70	10,868	D	4,924	293	256,478	–5	–47	+10
Wisconsin Electric Power	72	10,869	D	5,951	101	540	+5	–39	–69
Washington Water Power	73	10,870	U	1,039	116	19	+52	–3	–
Northern States Power	74	10,872	U	7,517	29	457	+5	–79	+10
Pacific Gas & Electric	75	10,905	D	0	834	248,138	0	–56	+31
Public Service of Colorado	76	10,907	U	6,901	28	1,482	+1	–70	+19
Empire District Electric	77	10,927	U	1,216	6	610	+7	–68	+26
Philadelphia Electric	78	10,940	U	2,933	8,237	1,147	+13	–6	+107
Texas Utilities	79	10,952	D	29,611	408	366,828	+1	–81	+18
Central Maine Power	80	10,986	U	0	2,514	0	0	–	0
Northern Indiana Public Service	81	11,002	D	4,623	41	882	–9	–55	–62
Public Service of New Mexico	82	11,022	D	4,022	39	104	–13	+200	–84
Pacificorp	83	11,043	D	11,094	74	0	+16	+16	0
Madison Gas & Electric	84	11,061	D	828	5	1,074	–3	0	–16
Nevada Power	85	11,083	D	2,598	43	3,207	+11	–7	+62
Commonwealth Edison	86	11,085	U	14,337	4,632	2,773	–15	–33	–63
Iowa Resources	87	11,148	U	1,991	12	866	–2	–54	–
Portland General Electric	88	11,150	D	1,001	0	0	+61	0	0
Kansas Gas & Electric	89	11,161	U	3,520	1	10,935	+10	–88	–17
Puget Sound Power & Light	90	11,210	U	2,188	1	18	+65	–80	–28
Montana Power	91	11,228	U	1,960	12	346	+68	–97	–63
Consolidated Edison	92	11,319	U	0	17,610	87,674	0	–21	+30
Interstate Power	93	11,508	U	1,963	18	950	–7	–28	–15
Kansas Power & Light	94	11,582	D	5,915	27	2,442	+7	–69	–48
Iowa Electric Light & Power	95	11,586	U	693	15	236	–28	–21	–13
Otter Tail Power	96	11,633	D	1,946	1	8	+3	–67	0
Central	97	12,252	U	855	5	5,279	+15	–49	–32
Montana-Dakota Utilities	98	12,438	D	1,577	6	57	–2	–61	+68
Central Vermont Public Service	99	13,014	U	60*	40	0	–	+9	0
TNP Enterprises	100	18,805	U	0	0	62	0	–100	+130

*Wood

reported in the Uniform Statistical Reports are shown in Table 4. Table 5 shows the leaders in fossil-boiler heat rate. (This eliminates the effect of nuclear plants, gas turbines, and diesel engines on heat rate.)

Peaks up slightly

Data presented in the second large table, and summarized in table 2, show that peak demand rose only slightly in 1984. A slower pace of economic growth than in 1983 and a relatively cool summer (following a heat wave in 1983) led to modest increases. The leaders:

- Pennsylvania Power & Light...up 13.3 percent to 5519 MW,
- San Diego Gas & Electric...up 13.2 percent to 2342 MW,
- Southern California Edison...up 12.8 percent to 15,189 MW,
- Texas Utilities...up 8.8 percent to 15,265 MW,
- Boston Edison...up 6.9 percent to 2387 MW,
- Tucson Electric Power...up 6.4 percent to 1031 MW,
- Nevada Power...up 6.3 percent to 1537 MW,
- Orange & Rockland...up 6.2 percent to 767 MW,
- American Electric Power...up 6.1 percent to 20,669 MW,
- Allegheny Power System...up 6.0 percent to 5508 MW,
- Commonwealth Energy System...up 6.0 percent to 703 MW.

In past decades utilities averaged 6

TABLE 4
TOP 20 GENERATING UNITS– BY HEAT RATE (CF > 50%)

	Unit	Capacity (MW)
1.	Marshall 3	630
2.	Brayton 3	632
3.	Canal 1	568
4.	Belews Creek 2	1120
5.	Eastlake 5	446
6.	Marshall 2	385
7.	Marshall 4	630
8.	Belews Creek 1	1120
9.	Marshall 1	385
10.	Trenton Channel 9	500
11.	Bayshore 4	215
12.	Bayshore 3	142
13.	Crystal River 4	717
14.	Mountaineer 1	1300
15.	Amos 2	800
15.	Stuart 4	205
17.	Bayshore 1	136
18.	Morgantown 2	582
19.	Monroe 1	750
20.	Amos 1	800

percent gains in peak demand. Now 6 percent is good enough to make the top 10.

Summer weather was mild in 1984 but winter weather was even milder. There were only 17 winter peakers last year, down from 19 in 1983 and 32 in 1982.

Balanced seasonal demand and rising industrial consumption are improving load factors. Average load factor (unweighted) climbed from 57.5 in 1982 to 57.7 in 1983 and 59.6 last year.

"Summer weather was mild in 1984, but winter weather was even milder."

Capacity growth stalled

The data in Table 2 show that while peak demand isn't growing much, it's growing faster than generating capacity which has stabilized in recent years for the top 100.

In the past five years, the top 100's system capability has grown at the rate of about one percent, or 5000 MW, a year. The group's system reserve margin has declined from a high of 29 percent in 1982 to 24 percent in 1984. It should be noted that reserve margins for the electric utility industry as a whole are somewhat higher

Utility	Heat rate (Btu/kWh)
Duke Power	8960
New England Electric	9090
Commonwealth Energy	9098
Duke Power	9110
Cleveland Electric Illuminating	9110
Duke Power	9129
Duke Power	9133
Duke Power	9148
Duke Power	9155
Detroit Edison	9206
Toledo Edison	9278
Toledo Edison	9305
Florida Progress	9310
American Electric Power	9317
American Electric Power	9325
Dayton Power & Light	9325
Toledo Edison	9333
Potomac Electric Power	9343
Detroit Edison	9344
American Electric Power	9392

PEAK DEMAND AND CAPABILITY

Company	System Peak (MW)	% Change	Winter (W) or Summer (S)	Total System Capacity (MW (at time of peak))	Total System Reserve %	Overall Capacity MW (at time of peak)	Overall Reserve %	Load Factor %
Allegheny Power System	5,507	+6.0	W	NA	–	7,138	30	69.3
American Electric Power	20,665	+6.1	S	19,814	–4	21,346	3	66.1
Arizona Public Service	2,970	+2.4	S	3,344	13	3,150	6	54.9
Atlantic Electric	1,288	-3.6	S	1,584	23	1,481	14	58.1
Baltimore Gas & Electric	4,230	+3.7	S	5,490	30	5,371	27	55.2
Boston Edison	2,987	+8.8	W	3,961	9	2,724	14	57.8
Carolina Power & Light	6,490	+1.0	S	6,984	28	8,256	28	59.5
Central	578	-7.8	S	NA	NA	659	14	NA
Central & South West	12,500	+0.7	S	13,945	29	12,217	24	65.9
Central Hudson Gas & Electric	880	+3.9	S	1,080	36	960	42	65.9
Central Illinois Light	934	-5.3	S	1,287	38	1,287	38	56.4
Central Illinois Public Service	1,780	-9.6	S	2,900	63	2,780	56	59.5
Central Louisiana Electric	1,010	-0.5	S	1,462	44	1,445	43	56.0
Central Maine Power	1,265	-0.1	W	NA	–	957	-26	72.1
Central Vermont Public Service	410	+5.7	S	443	10	98	-76	63.5
Cincinnati Gas & Electric	3,169	-0.2	S	4,030	30	4,030	30	60.0
Cleveland Electric Illuminating	3,271	+1.0	S	3,894	19	3,694	10	64.5
Commonwealth Edison	14,572	+0.4	S	17,627	21	16,963	16	53.4
Commonwealth Energy System	702	+0.9	S	831	18	225	68	63.3
Consolidated Edison	7,655	+0.9	S	10,467	41	9,287	26	49.7
Consumers Power	4,837	+1.5	S	6,099	26	6,392	32	66.5
Dayton Power & Light	2,105	-2.2	W	2,683	27	2,687	28	60.8
Delmarva Power & Light	1,515	-0.3	S	2,172	38	2,172	38	64.1
Detroit Edison	7,350	+4.1	S	9,271	26	8,700	18	60.2
Dominion Resources	8,995	-5.4	S	11,231	26	10,115	14	59.8
Duke Power	11,940	-4.6	W	13,782	25	13,594	23	62.2
Duquesne Light	3,172	-0.5	S	5,083	38	3,073	41	63.8
Eastern Utilities Associates	715	+3.3	S	858	20	586	-22	60.4
El Paso Electric	770	+4.0	S	1,009	30	1,009	30	63.8
Empire District Electric	520	-0.2	S	624	19	622	19	54.2
Florida Progress (FPC)	4,858	-1.1	W	6,300	30	6,100	26	48.5
FPL&L Group (FPL&L)	10,270	-3.6	W	11,781	15	13,470	31	58.9
General Public Utilities	6,401	+4.3	S	8,702	36	7,757	21	NA
Gulf States Utilities	5,475	+2.4	S	6,780	24	6,504	19	69.0
Hawaiian Electric	1,131	-0.3	W	1,596	41	1,495	32	72.6
Houston Industries	10,861	+1.0	S	13,250	22	12,275	13	63.0
Idaho Power	2,339	+6.2	S	2,859	23	2,519	15	62.0
Illinois Power	3,217	+0.1	S	3,672	14	3,717	16	58.3
Indianapolis Power	764	-2.0	S	953	25	950	24	62.1
Iowa Electric Light & Power	867	+1.0	S	1,147	19	906	3	53.9
Iowa Resources	1,156	-4.4	S	1,420	23	1,331	15	48.3
Iowa-Illinois Gas & Electric	894	-2.7	S	1,433	44	1,539	55	50.9
IPALCO	2,043	-1.1	S	2,406	18	2,406	18	57.0
Kansas City Power & Light	2,297	-1.2	S	2,647	15	2,477	8	47.2
Kansas Gas & Electric	1,943	-3.2	S	2,027	30	2,084	33	52.6
Kansas Power & Light	1,802	-2.8	S	2,488	37	2,681	49	49.0
Kentucky Utilities	2,193	-0.6	W	2,935	33	2,678	22	58.6
Long Island Lighting	3,988	-0.4	S	5,721	20	3,778	22	NA
Louisville Gas & Electric	1,749	-7.2	S	2,343	34	2,343	34	53.5
Madison Gas & Electric	427	+0.2	S	953	30	589	38	58.0
Middle South Utilities	10,474	-3.8	S	13,987	34	14,126	35	61.3
Midwest Energy	766	-7.1	S	1,262	64	1,262	64	48.5
Minnesota Power	1,351	+2.9	S	1,903	72	1,395	33	78.0
Missouri Public Service	742	+0.4	S	906	22	906	22	43.6
Montana-Dakota Utilities	355	+0.3	S	406	14	406	14	58.2
Montana Power	1,221	+10.0	W	1,544	26	1,314	8	67.0
Nevada Power	1,537	+6.3	S	1,862	21	1,750	14	49.2
New England Electric	3,370	+4.5	S	4,152	23	3,875	15	61.7
New York State Electric & Gas	2,354	+3.6	W	3,129	39	2,444	8	67.3
Niagara Mohawk Power	5,530	+1.0	W	7,701	39	5,315	-4	69.3
Northeast Utilities	4,234	+4.7	S	5,912	40	6,215	47	62.4
Northern Indiana Public Service	2,272	-3.6	S	3,430	51	3,030	33	65.3
Northern States Power	5,544	+2.9	S	6,457	16	5,924	7	57.5
Ohio Edison	4,397	-1.3	S	5,698	39	5,416	32	68.4
Oklahoma Gas & Electric	4,700	+3.5	S	5,860	25	5,814	24	51.0
Orange & Rockland	767	+0.2	S	1,034	34	1,011	32	50.5
Otter Tail Power	546	0	W	648	19	596	9	59.7
Pacific Gas & Electric	14,225	+1.4	S	16,959	27	12,617	-11	70.7
PacifiCorp	4,346	-2.1	W	5,431	28	3,863	-9	61.0
Pennsylvania Power & Light	5,510	+13.3	W	7,484	36	7,415	34	61.4
Philadelphia Electric	5,925	+0.8	S	7,753	31	7,753	31	57.7
Portland General Electric	2,962	-9.6	W	4,202	47	2,558	11	55.4
Potomac Electric Power	4,400	+4.8	S	5,368	20	5,368	20	50.7
Public Service Electric & Gas	7,422	+2.5	S	9,333	25	8,999	21	52.4
Public Service of Colorado	2,968	0	S	3,700	25	3,036	2	68.3
Public Service of Indiana	3,683	-2.9	S	5,877	60	5,627	54	61.1
Public Service of New Hampshire	1,202	-1.5	W	1,433	19	1,299	8	62.4
Public Service of New Mexico	970	-2.2	S	1,479	52	1,479	52	69.4
Puget Sound Power & Light	2,491	-11.2	W	4,035	16	1,688	-62	50.2
Rochester Gas & Electric	1,075	+3.7	S	1,532	43	1,151	7	63.9
San Diego Gas & Electric	2,342	+13.2	S	2,759	18	2,471	6	55.9
Savannah Electric & Power	481	-1.0	S	670	39	600	25	54.2
Sierra Pacific Resources	708	+5.0	S	968	37	589	-17	69.2
South Carolina Electric & Gas	2,596	-3.9	S	3,056	18	3,959	53	58.0
Southern California Edison	15,169	+12.8	S	16,938	12	14,841	-2	53.1
Southern Company	19,772	-3.6	S	28,161	32	24,856	26	58.9
Southern Indiana Gas & Electric	802	-6.3	S	917	2	917	2	55.0
Southwestern Public Service	2,763	+7.0	S	3,589	30	3,586	30	65.3
Taco Energy	2,173	+3.6	W	2,578	19	2,578	19	62.2
Texas Utilities	15,285	+5.6	S	17,914	17	17,810	17	54.4
TNP Enterprises	NA	NA	NA	NA	NA	NA	NA	NA
Toledo Edison	1,327	+0.2	S	1,726	30	1,688	27	58.2
Tucson Electric Power	1,021	+6.4	S	1,127	9	1,326	29	59.3
Union Electric	6,543	+3.8	S	7,629	17	6,669	2	53.2
United Illuminating	999	+3.0	S	1,225	23	1,225	23	57.3
Utah Power & Light	3,220	+3.3	S	3,540	-8	3,165	-2	70.2
Washington Water Power	1,469	-11.6	W	1,859	27	1,381	-6	54.9
Wisconsin Electric Power	3,694	+3.6	S	3,950	7	4,034	10	60.0
Wisconsin Power & Light	1,438	+1.8	S	1,760	25	1,625	14	63.0
Wisconsin Public Service	1,203	+3.2	S	1,673	39	1,661	38	73.6

TYPE OF GENERATION IN THE SYSTEM

Company	Fossil MW	Fossil %	Fossil Last Year Change MW	Hydro & Pump Storage MW	Hydro & Pump Storage %	Hydro & Pump Storage Last Year Change MW	Combustion Turbines MW	Combustion Turbines %	Combustion Turbines Last Year Change MW	Nuclear MW	Nuclear %	Nuclear Last Year Change MW
Allegheny Power System	7,047	99	−29	62	1	0	0	0	0	0	0	0
American Electric Power	19,800	87	+1445	836	4	0	85	1	−103	2130	9	0
Arizona Public Service	2,644	84	−122	6	1	0	501	16	0	0	0	0
Atlantic Electric	794	54	+48	0	0	0	368	25	0	319	22	0
Baltimore Gas & Electric	3,038	56	+536	0	0	0	717	13	0	1650	31	0
Boston Edison	1,867	96	+10	0	0	0	247	9	−68	670	25	0
Carolina Power & Light	5,088	61	0	214	3	0	1019	12	0	1955	24	0
Central	530	82	−96	0	–	–	120	18	0	0	–	–
Central & South West	12,788	100	+572	0	0	0	0	0	0	0	0	0
Central Hudson Gas & Electric	804	81	+1	43	4	0	43	4	0	0	0	0
Central Illinois Light	1,255	98	0	0	0	0	32	2	0	0	0	0
Central Illinois Public Service	2,773	2	+99	0	0	0	3	1	0	0	0	0
Central Louisiana Electric	1,361	100	−121	0	0	0	0	0	−23	0	0	0
Central Maine Power	590	62	−59	323	34	−5	45	4	+45	0	0	0
Central Vermont Public Service	26	26	+11	40	41	+1	32	33	0	0	0	0
Cincinnati Gas & Electric	1,556	88	0	0	0	0	478	12	0	0	0	0
Cleveland Electric Illuminating	2,880	78	−647	305	8	0	62	2	0	447	12	0
Commonwealth Edison	2,703	52	+50	624	3	0	1331	7	0	7007	38	+1078
Commonwealth Energy System	1,023	94	0	0	0	0	62	6	0	0	0	0
Consolidated Edison	6,552	69	+108	0	0	0	2080	22	+13	849	9	0
Consumers Power	4,193	64	+8	1089	17	0	477	7	0	826	13	+6
Dayton Power & Light	2,291	92	−4	0	0	0	210	8	+27	0	0	0
Delmarva Power & Light	1,737	78	0	0	0	0	170	8	+26	319	14	0
Detroit Edison	7,231	83	+363	918	11	0	530	6	0	0	0	0
Dominion Resources	6,020	61	−6	326	3	0	439	4	0	3124	32	+12
Duke Power	6,803	48	−897	1452	11	0	589	4	0	4940	37	+1180
Duquesne Light	2,763	88	–	0	0	0	0	0	0	385	12	0
Eastern Utilities Associates	509	92	0	0	0	0	47	8	0	0	0	0
El Paso Electric	920	93	−1	0	0	0	68	7	0	0	0	0
Empire District Electric	412	66	0	16	3	0	196	31	0	0	0	0
Florida Progress (FPC)	4,204	64	+762	0	0	0	1571	24	−134	761	12	+9
FP&L Group (FP&L)	8,186	63	0	0	0	0	1977	15	0	2823	22	0
General Public Utilities	4,101	49	0	357	4	–	1487	18	−386	2356	28	0
Gulf States Utilities	6,264	99	−27	0	0	0	90	1	0	0	0	0
Hawaiian Electric	1,274	86	0	0	0	0	219	14	+4	0	0	0
Houston Industries	11,101	90	+241	0	0	0	1174	10	−182	0	0	0
Idaho Power	858	33	0	1671	65	+13	50	2	0	0	0	0
Illinois Power	3,562	95	−64	2	–	0	178	5	0	0	0	0
Interstate Power	895	94	+25	0	0	0	55	6	0	0	0	0
Iowa Electric Light & Power	941	62	+90	0	0	0	156	15	−2	360	33	0
Iowa Resources	1,054	79	0	0	0	0	275	21	0	0	0	0
Iowa-Illinois Gas & Electric	1,085	69	+1	3	–	0	68	4	0	384	24	0
IPALCO	2,322	97	−141	0	0	0	74	3	+9	0	0	0
Kansas City Power & Light	2,107	85	−157	0	0	0	370	15	0	0	0	0
Kansas Gas & Electric	2,060	99	−23	0	0	0	23	1	0	0	0	0
Kansas Power & Light	2,342	87	0	0	0	0	339	13	0	0	0	0
Kentucky Utilities	3,092	97	+811	24	1	0	59	2	0	0	0	0
Long Island Lighting	NA	–	–	NA	–	–	NA	–	–	NA	–	–
Louisville Gas & Electric	2,133	95	−104	0	0	0	109	5	0	0	0	0
Madison Gas & Electric	406	68	−4	0	0	0	92	16	0	95	16	+3
Middle South Utilities	12,664	85	+475	69	1	0	387	3	−13	1694	11	0
Midwest Energy	1,053	83	+89	0	0	0	209	17	+1	0	0	0
Minnesota Power	1,285	93	0	109	7	0	0	0	0	0	0	0
Missouri Public Service	610	67	+4	0	0	0	296	33	0	0	0	0
Montana-Dakota Utilities	348	80	0	0	0	0	86	20	0	0	0	0
Montana Power	789	60	+210	520	40	0	5	–	0	0	0	0
Nevada Power	1,312	75	0	0	0	0	438	25	0	0	0	0
New England Electric	2,649	68	+1	1175	30	+2	96	2	0	0	0	0
New York State Electric & Gas	2,376	97	+843	60	2	+4	8	1	−2	0	0	0
Niagara Mohawk Power	3,706	69	+6	894	13	0	389	7	+59	845	12	+22
Northeast Utilities	2,485	43	0	1275	22	+9	501	9	−22	1520	26	0
Northern Indiana Public Service	7,801	92	+22	10	1	0	241	7	0	0	0	0
Northern States Power	3,264	55	+22	224	4	+2	928	17	+2	1539	28	0
Ohio Edison	4,791	89	+18	0	0	0	139	3	−3	425	8	0
Oklahoma Gas & Electric	5,598	99	+403	0	0	0	59	1	0	0	0	0
Orange & Rockland	902	89	0	34	3	0	74	7	0	0	0	0
Otter Tail Power	504	85	0	4	1	−1	87	15	0	0	0	0
Pacific Gas & Electric	8,527*	75	+252	2612	22	+5	394	3	0	0	0	0
Pacificorp	3,052	75	+70	976	24	0	0	0	0	27	1	0
Pennsylvania Power & Light	5,785	78	+100	146	2	0	539	7	0	948	13	0
Philadelphia Electric	3,367	43	−22	1290	17	−102	1280	17	−82	1816	23	0
Portland General Electric	1,130	44	–	601	23	–	122	5	–	729	28	–
Potomac Electric Power	4,809	90	+4	0	0	0	566	10	+4	0	0	0
Public Service Electric & Gas	4,312	48	0	165	2	0	2700	30	−5	1817	20	0
Public Service of Colorado	2,462	81	−68	186	6	+71	186	6	−1	200	7	0
Public Service of Indiana	5,411	96	0	55	1	0	221	4	0	0	0	0
Public Service of New Hampshire	1,098	85	+7	69	5	+4	118	9	−65	0	0	0
Public Service of New Mexico	1,317	98	−80	0	0	0	28	2	−2	0	0	0
Puget Sound Power & Light	883	40	+175	310	19	0	702	41	+247	0	0	0
Rochester Gas & Electric	587	52	−18	47	4	0	29	3	0	470	41	0
San Diego Gas & Electric	1,854	69	+102	0	0	0	333	12	0	515	19	+214
Savannah Electric & Power	537	88	0	0	0	0	72	12	0	0	0	0
Sierra Pacific Resources	591	86	0	12	2	0	86	13	−1	0	0	0
South Carolina Electric & Gas	2,418	61	0	756	19	0	185	5	0	600	15	0
Southern California Edison	10,370	70	0	929	6	0	1632	11	0	1962	13	+788
Southern Company	18,831	76	+117	2385	10	+98	1131	4	−34	2375	10	−13
Southern Indiana Gas & Electric	782	85	−97	0	0	0	135	15	0	0	0	0
Southwestern Public Service	3,480	97	0	0	0	0	106	3	0	0	0	0
Taco Energy	2,435	84	+15	0	0	0	159	6	0	0	0	0
Texas Utilities	17,804	100	0	0	0	0	0	0	−6	0	0	0
TNP Enterprises	39	78	0	0	0	0	11	22	0	0	0	0
Toledo Edison	1,199	71	−24	0	0	0	66	−1	−11	423	25	−5
Tucson Electric Power	1,108	84	−240	0	0	0	218	16	0	0	0	0
Union Electric	5,579	72	0	631	8	0	391	5	+2	1120	15	+1120
United Illuminating	1,216	98	−6	0	0	0	22	2	0	0	0	0
Utah Power & Light	3,040*	96	+20	127	4	+1	19	1	0	0	0	0
Washington Water Power	344	25	+105	946	68	0	101	7	0	0	0	0
Wisconsin Electric Power	2,701	68	−24	7	1	0	288	7	0	970	24	−20
Wisconsin Power & Light	1,193	74	−3	42	3	0	176	11	+2	214	13	0
Wisconsin Public Service	1,234	74	−3	84	3	−2	157	9	−33	215	13	+1

*Includes geothermal capacity

than for the 100 largest IOUs.

However, the reserve margin for the top 100 has been declining at the rate of about two percentage points a year since the last recession bottomed out. The reserve margin is large enough to support this trend for quite a while, but the leadtime required to build new generation suggests that utilities begin looking once again at capacity planning.

New nukes

The data in the third large table, summarized in table 3, show that additions of new nuclear and coal-fired base-load capacity are being largely offset by retirements and downratings of older fossil-fired steam capacity and gas turbines.

The only clear trend that shows up in the generation table is the growth of nuclear capacity over the last few years. Nuclear capacity at the top 100 climbed 11 percent in 1984 and 8 percent in 1983—the only generating type to show a significant gain in two years.

The leading nuclear utilities:

- Commonwealth Edison...7007 MW of nuclear capacity,
- Duke Power...4940 MW,
- Dominion Resources...3124 MW,
- FP&L...2823 MW,
- Southern Company...2375 MW,
- General Public Utilities...2356 MW,
- American Electric Power...2130 MW,
- Southern California Edison...1962 MW,
- Carolina Power & Light...1955 MW,
- Public Service Electric & Gas...1817 MW,
- Philadelphia Electric...1816 MW,
- Middle South Utilities...1964 MW,
- Baltimore Gas & Electric...1650 MW,

TABLE 5
SYSTEM HEAT RATE LEADERS—FOSSIL-FUELED BOILERS ONLY

	Utility	Heat rate (Btu/kWh)
1.	Duke Power	9318
2.	Commonwealth Energy	9636
3.	Consumers Power	9690
4.	American Electric Power	9766
5.	Toledo Edison	9850
6.	Florida Progress	9883
7.	South Carolina Electric & Gas	9941
8.	Dayton Power & Light	9947
9.	United Illuminating	9955
10.	Cincinnati Gas & Electric	9968

- Northern States Power...1539 MW, and
- Northeast Utilities...1520 MW.

T&D additions

No particular trends are evident in the T&D data. Unfortunately, data reporting is not consistent enough to allow summarization of the T&D information.

Utilities with the largest additions to their high voltage transmission systems (above 189 kV) in 1984 are:

- FP&L...499 circuit miles added,
- Portland General Electric...494 circuit miles,
- San Diego Gas & Electric...363 circuit miles,
- Central & South West...222 circuit miles, and
- Middle South Utilities...211 circuit miles.

Utilities that added the most to transmission systems at lower voltages (below 189 kV):

- Commonwealth Edison...374 circuit miles added,
- Puget Sound Power & Light...315 pole miles added,
- Union Electric...133 circuit miles added,
- Kentucky Utilities...129 circuit miles, and
- Illinois Power...91 circuit miles.

For overhead distribution, above 22 kV, utilities showing the most growth are Central and Southwest, which added 230 pole miles, and Delmarva Power & Light, which added 229 pole miles. For lower voltage overhead distribution, less than 22 kV, the growth leaders were:

- Union Electric...3035 pole miles added,
- Middle South Utilities...1351 pole miles,
- Central & South West...724 pole miles,
- Texas Utilities...456 pole miles, and
- Houston Industries...399 pole miles.

For underground distribution at voltage levels above 22kV, the leaders are Southwestern Public Service with 252 added cable miles and Delmarva Power & Light with 235 added cable miles. For underground distribution at voltages below 22 kV the leaders are:

- Southern California Edison...1242 added cable miles,
- Public Service Electric & Gas...1068 added cable miles,
- Allegheny Power System...546 added cable miles,
- Florida Progress...487 added cable miles,
- Northern States Power...467 added cable miles, and
- Union Electric...467 added.

TRANSMISSION AND DISTRIBUTION LINES IN OPERATION

	Transmission				Distribution							
					Overhead				Underground			
Company	189 kV & Up (circuit miles)	Miles Added	Below 189 kV (circuit miles)	Miles Added	22 kV & Up (pole miles)	Miles Added	Below 22 kV (pole miles)	Miles Added	22 kV & Up (cable miles)	Miles Added	Below 22 kV (cable miles)	Miles Added
Allegheny Power System	889	1	3,338	35	4,520	–27	48,263	270	11	2	2,449	546
American Electric Power	5755	–	15,730	–	3,911	73	92,233	346	246	9	5,591	167
Arizona Public Service	2384†	120	2,274†	19	0	–	10,420	70	0	0	5,236	389
Atlantic Electric	64	0	1,165	3	0	0	5,910	31	0	0	704	40
Baltimore Gas & Electric	489	0	604	0	740	3	51,234*	–	163	2	18,530	–
Boston Edison	160	0	190	0	0	0	3,377	4	0	0	7,173	0
Carolina Power & Light	2829	197	3,038	–7	36,446*	226*	–	–	2,848*	244*	–	–
Centel	2973*	–1*	–	–	6,662*	28*	–	–	608*	18*	–	–
Central & South West	1335	222	10,027	–4197	467	230	53,861	724	249	249	4,993	79
Central Hudson Gas & Electric	76	0	527	6	44	0	6,287	24	0	0	692	27
Central Illinois Light	47	0	283	–3	627	–1	5,619	–16	7	0	1,652	28
Central Illinois Public Service	305	0	4,230	–1	0	0	8,282	7	0	0	605	24
Central Louisiana Electric	298	0	767	0	10,268	100	0	–	174*	4*	–	–
Central Maine Power	NA	–	NA	–	NA	–	NA	–	NA	–	NA	–
Central Vermont Public Service	0	0	615	0	0	0	7,012	45	0	0	93	8
Cincinnati Gas & Electric	383	4	1,331	–46	490	7	8,915	12	23	2	1,683	65
Cleveland Electric Illuminating	358	–1	1,997	0	0	0	9,452	18	0	0	4,982	16
Commonwealth Edison	2433	50	2,818	374	35,646*	59*	–	–	20,556*	500*	–	–
Commonwealth Energy System	60	0	293	0	1,448	34	3,295	16	731	43	2,017	57
Consolidated Edison	409	–1	22	0	389	35	25,560	–136	6,359	49	58,000	–107
Consumers Power	1916	0	7,930	–1	47,217*	215*	–	–	6,019*	157*	–	–
Dayton Power & Light	448	–	1,322	–	NA	–	NA	–	NA	–	NA	–
Delmarva Power & Light	263	–1	1,107	45	4,811	229	1,761	–714	1,588	235	697	294
Detroit Edison	968	0	4,407	5	0	0	29,535	86	0	0	6,867	62
Dominion Resources	2735	69	2,953	31	38,228*	189*	–	–	11,541*	468*	–	–
Duke Power	3009	29	10,191	1052	8,982	105	46,478	393	1,655	147	3,275	208
Duquesne Light	508	3	132	–	NA	–	NA	–	NA	–	NA	–
Eastern Utilities Associates	75	0	289	0	64	–1	3,431	96	6	0	867	16
El Paso Electric	633	171	654	0	1,301	30	2,921	28	83	19	665	21
Empire District Electric	0	0	1,227	37	0	0	4,583	61	0	0	213	9
Florida Progress (FPC)	1467	74	2,714	–6	0	0	15,877	151	0	0	5,899	487
FP&L Group (FP&L)	2993	499	2,235	0	33,132*	625*	–	–	10,228*	693*	–	–
General Public Utilities	2068	24	4,427	6	4,729	138	40,119	25	1,290	61	10,543	415
Gulf States Utilities	1149	–	3,549	–	1,203	–	18,322	–	379	–	1,523	–
Hawaiian Electric	0	0	1,292	12	0	0	3,740	11	0	0	2,220	60
Houston Industries	935	177	2,468	23	936	65	17,650	399	797	111	3,916	213
Idaho Power	1481†	30	3,177†	–52	4,008	97	13,020	–35	142	15	4,255	140
Illinois Power	485	0	2,448	91	1,349	18	16,466	50	4	0	983	14
Interstate Power	69	0	2,604	–11	NA	–	NA	–	0	0	500	10
Iowa Electric Light & Power	67	0	3,211	–21	0	0	4,704	6	0	0	1,566	64
Iowa Resources	345	–	1,177	–	0	0	11,225	10	0	0	1,980	87
Iowa-Illinois Gas & Electric	305	42	640	0	0	0	3,323	32	0	0	1,071	48
IPALCO	419	0	617	0	0	0	4,640	23	0	0	3,554	120
Kansas City Power & Light	295	0	1,356	24	0	0	8,814	16	0	0	4,386	277
Kansas Gas & Electric	663	98	1,574	–1	0	0	7,743	3	0	0	1,712	97
Kansas Power & Light	778	–	3,596	–	0	0	12,248	86	0	0	402	17
Kentucky Utilities	477	44	4,248	129	0	0	13,930	89	0	0	0	0
Long Island Lighting	NA	–	NA	–	NA	–	NA	–	NA	–	NA	–
Louisville Gas & Electric	131	0	758	0	86	–1	3,264	15	0	0	1,763	44
Madison Gas & Electric	124	0	177	–2	0	0	1,076	0	0	0	526	23
Middle South Utilities	2360	211	7,459	28	4,500	–1112	64,825	1251	1,518	54	2,731	206
Midwest Energy	191	–3	2,216	6	NA	–	NA	–	NA	–	NA	–
Minnesota Power	606†	0	1,503†	0	760	–2	3,890	–6	0	0	832	90
Missouri Public Service	58†	0	1,280†	20	0	0	4,662	13	0	0	494	27
Montana-Dakota Utilities	305	39	2,851	–19	0	0	2,834	10	0	0	1,620	83
Montana Power	1449	–22	5,409	–52	0	0	12,733	168	0	0	1,019	48
Nevada Power	613	0	458	0	0	0	2,636	20	0	0	2,500	122
New England Electric	602	0	1,977	–3	786	1	16,143	97	200	1	6,668	140
New York State Electric & Gas	813	–	3,792	–	2,110	–	30,018	–	1,547*	14*	–	–
Niagara Mohawk Power	1116	0	8,083	–61	107,517*†	172*†	–	–	6,603*	93*	–	–
Northeast Utilities	450	–	1,615	–	20,813*	51*	–	–	5,456*	164*	–	–
Northern Indiana Public Service	332	0	2,615	23	0	0	7,605	–41	0	0	627	+29
Northern States Power	1445	0	5,445	+22	0	0	25,022	1	0	0	10,036	+467
Ohio Edison	522	–52	4,928	57	0	0	24,577	52	0	0	2,710	93
Oklahoma Gas & Electric	926	115	3,535	–11	19,203*	161*	–	–	5,023*	253*	–	–
Orange & Rockland	80	0	473	–5	0	0	4,614	41	0	0	883	49
Otter Tail Power	407	38	5,033	4	147	0	888	–39	21	0	1,396	47
Pacific Gas & Electric	6391	–	11,443	–	85,494*	3700*	–	–	10,759*°	–	–	–
Pacificorp	3226	0	3,764	–83	27,612*	73*	–	–	7,093*	227*	–	–
Pennsylvania Power & Light	0	0	1,307	–5	2,343	5	46,877	348	10	0	6,325	299
Philadelphia Electric	720	47	365	0	61	0	11,742	68	17	0	14,863	230
Portland General Electric	1038	494	943	–1	0	–	8,758	–	0	0	3,745	62
Potomac Electric Power	773	0	26	0	295	0	4,556	6	787	11	9,334	551
Public Service Electric & Gas	680	0	1,756	–46	NA	–	14	0	109	0	20,560	1068
Public Service of Colorado	1275	–	1,638	–	1,399	–	11,542	–	187	–	4,114	–
Public Service of Indiana	1472	0	4,024	–27	0	0	18,129	11	0	0	2,151	112
Public Service of New Hampshire	283	0	1,458	–6	9,311*	–20*	–	–	459*	16*	–	–
Public Service of New Mexico	1754	–	879	–	0	0	4,404	75	0	0	1,786	130
Puget Sound Power & Light	337†	1	1,762†	115†	11,870*	–560*	–	–	4,620*	262*	–	–
Rochester Gas & Electric	0	0	709	8	0	0	6,666	64	0	0	4,158	63
San Diego Gas & Electric	606	363	1,107	9	0	0	7,250	19	0	0	6,002	4
Savannah Electric & Power	39	0	56	2	291	1	2,229	28	–	–	–	–
Sierra Pacific Resources	906	11	2,392	10	7,302*	1152*	–	–	2,444*	511*	–	–
South Carolina Electric & Gas	749	9	2,367	30	7,088	69	5,874	53	41	–6	1,559	68
Southern California Edison	5160	–1	6,254	33	44,402*	314*	–	–	148	7	40,629	1242
Southern Company	5610	160	19,793	341	84,943*	825*	–	–	10,030*	456*	–	–
Southern Indiana Gas & Electric	0	0	803	–1	0	0	3,175	–1	0	0	656	37
Southwestern Public Service	1201	–	3,982	–	15,238	142	0	0	1,099	252	0	0
Teco Energy	353	–	757	–	0	0	6,407	62	0	0	1,571	106
Texas Utilities	3639	–11	8,696	26	2,785	147	47,471	456	943	173	6,879	443
TNP Enterprises	20	0	1,583	32	0	0	8,004	199	0	0	340	33
Toledo Edison	158†	0	1,025†	–1	7,666*	16*	–	–	741*	29*	–	–
Tucson Electric Power	1346	–	318	–	553	–	6,079	–	33	–	2,409	–
Union Electric	909	0	2,621	133	3,612	9	19,866	3035	337	1	7,419	467
United Illuminating	6	0	89	0	2	0	3,015	14	3	0	1,169	–9
Utah Power & Light	2079†	–3†	5,556†	28†	15,574*	1181*	–	–	2,703*°	269*°	–	–
Washington Water Power	545	0	1,523	46	580	4	8,717	14	0	0	1,245	58
Wisconsin Electric Power	686	–	1,808	–	22,190*	59*	–	–	7,645*	160*	–	–
Wisconsin Power & Light	107	0	2,699	60	0	0	16,751	51	0	0	1,015	–7
Wisconsin Public Service	124	0	1,569	0	16,413*	36*	–	–	3,234*	120*	–	–

*Total, all voltage levels †Pole miles °Wire miles °Conduit bank miles